ABSTRACT

A data overlay is built as a data structure on a logical space defined by a distributed hash table (DHT) in a peer-to-peer network. The data overlay includes a tree having tree nodes that each have a zone mapped to a corresponding DHT node in the logical space of the DHT. The logical space of the DHT is mapped to machines, each of which corresponds to one or more of more of the tree node zones. The tree nodes are hierarchically situated by tree node zone size and by available resources so that tasks are performed by machines in the peer-to-peer network according to the respective abilities of the machines to supply the tasks' demand. The tree, which self-organizes and self-heals on the same scale as the underlying DHT, is used to gather and disseminate information from and to the DHT nodes using the hierarchy of the tree nodes.